

We claim:

1. A composition for delivering an RNA to a mammalian cell comprising: a post-synthetically modified RNA.
2. The composition of claim 1 wherein the modified RNA consists of a functional group attached to the RNA.
3. The composition of claim 2 wherein the functional group is linked to the RNA via a labile bond.
4. The composition of claim 2 wherein the functional group is linked to a ribose 2' hydroxyl of the RNA.
5. The composition of claim 3 wherein the functional group is selected from the list consisting of: hydrophobic group, membrane active compound, cell penetrating compound, cell targeting signal, interaction modifier, and steric stabilizer.
6. The composition of claim 4 wherein the modified RNA is modified at: a single ribose 2' hydroxyl of the RNA, more than one but not all of the ribose 2' hydroxyls of the RNA, or all of the ribose 2' hydroxyls of the RNA.
7. The composition of claim 1 wherein the modified RNA consists of a silylated RNA.
8. The composition of claim 1 wherein the modified RNA consists of an acylated RNA.
9. The composition of claim 1 wherein the modified RNA consists of an alkylated RNA.
10. The composition of claim 2 wherein the composition further comprises a transfection agent.
11. The composition of claim 1 wherein the RNA is selected from the list consisting of: siRNA and microRNA.
12. The composition of claim 1 wherein the mammalian cell consists of: an *in vivo* mammalian cell or an *in vitro* mammalian cell.
13. The composition of claim 1 wherein the modified RNA is more resistant to nucleases than the same RNA if it were not modified.
14. A process for delivering an RNA to a mammalian cell comprising: post-synthetically modifying the RNA through silylation, acylation or alkylation to form a modified RNA, and contacting the cell with the modified RNA.
15. The process of claim 14 wherein modifying the RNA consists of covalently linking a functional group to a ribose 2' hydroxyl of the RNA.
16. The process of claim 15 wherein the functional group is selected from the list consisting of: hydrophobic group, membrane active compound, cell penetrating compound, cell targeting signal, interaction modifier, and steric stabilizer.

17. The process of claim 14 wherein the modified RNA is complexed with a transfection agent.
18. The process of claim 17 wherein modifying the RNA increases interaction of the RNA with the transfection agent.
19. The process of claim 14 wherein modifying the RNA increases resistance of the RNA to degradation by nucleases.
20. The process of claim 14 wherein the RNA is selected from the list consisting of: siRNA and microRNA.